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TREATMENT WITH CONSERVED TISSUE ACCORDING TO KRAUZE

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The scientific development of the idea of medical implantations is the work of Academician V. P. Filatov. In 1928, Filatov successfully started using conserved tissue. Implanting pieces of conserved cornea, he obtained clearing of the semitransparent transplant when it took root. Filatov showed not only usefulness of conserved corpse material, but also its more effective medicinal action as compared to cornea taken from live subjects.

After Filatov, a number of other authors (Yelanskiy, A. V. Vishnevskiy, Skosogorenko) noticed the stimulating effect of implantations on regeneration.

The method proposed by Professor Krauze is remarkable for its practicability and simplicity of application. It consists in the use of conserved fetus membrane in the form of implantates for subcutaneous insertion. Krauze showed on large and varied material that the local use of tissue stimulates the regeneration processes, encourages the resolution of scars and of inflammatory infiltrates, and also has very pronounced analgesic action.

The information from Krauze's clinic and from other authors who successfully used his method in treating nonhealing ulcers, wounds, contractures, inflammatory infiltrates, and other diseases prompted us to use this method on our patients.

Our results are comparatively meager (60 cases) and refer mostly to diseases which do not respond easily to the standard treatment. In this category fall 35 cases on nonhealing wounds and ulcers, 10 cases of inflammatory infiltrates and scars, 3 cases of stomach and duodenal ulcers, 5 cases of neuritis, 4 cases of causalgia, and 3 cases of phanthom pains after amputation of extremities.

In all the above cases, subcutaneous implantations were made, and in the cases of wounds and ulcers, simultaneous surface application of fetus membrane was carried out. The implantations were performed under consideration of localization of the pathogenic process: in cases of wounds and ulcers of the

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extremities on the side and in proximity of the focus of the disease and in cases of stomach and duodenal ulcers or scars and infiltrations of the face and neck on the lateral front surface of the chest. In those cases in which the first implantation did not bring about any effect, a second was performed 10-15 days later.

The tissue was prepared as follows: fresh fetus membrane, obtained from carefully examined lying-in-patients, was washed with warm physiological solution to remove the blood and immersed in a 2% chloramine solution. Treatment of the tissue was carried out for 7 days by changing the chloramine solution once every day. The tissue thus conserved was stored in a dark place in a dechlorinated chloramine solution [sic] until it was used.

The technique of implantation is not complicated. Immediately before insertion, 5-7 g of fetal membrane were immersed for 5-10 min in a fresh chloramine solution. Then the membrane was washed for 5-10 min in sterile physiological solution. Gauze was used to remove excess moisture from the tissue. After applying novacain (0.25 % - 30 %), the fetus membrane was introduced through a cut (1 cm) in the skin into a pocket formed in the subcutaneous-cell tissue by means of a Kocher clamp. One suture was made on the slit. To prevent hematoma at the point of the implantation, a pressure bandage was applied. The pressure bandage was soon replaced by an ordinary bandage held in place by tape.

Local reactive-inflammation phenomena were observed in the region of the implantation with the formation of a slight infiltration which was resolved within 5-7 or 5-10 days. In four cases, the temperature rose to 37.5°C on the day the implantation was performed, without any additional impairment of the general condition of the patient. We had no cases of suppuration.

Among the general symptoms after implantation, we observed in many cases improved appetite and sleep, and lessening of fatigue. In 20% of the cases, we noticed increased perspiration for 2-3 or 3-4 days and a feeling of heat in the extremities. Blood tests showed that in 59% of the cases, the number of leukocytes increased, while in 41%, a lowering within the normal range took place. No great fluctuations in the erythrocyte sedimentation rate were noticed.

In 42% of the cases, the blood pressure, after performance of the implantation, was lowered within the range of 5-10 mm Hg; of 10-15 mm Hg in 18% of the cases; 15-20 mm in 10% of the cases; and 20-25 mm in 3% of the cases. In 27% of the cases, the blood pressure remained unchanged. A rise in blood pressure was not observed.

Thirty-five patients were treated for wounds and ulcers. According to the location of these wounds and ulcers, they were distributed as follows: foot, 3; leg, 8; hip, 6; knee joint, 3; hand, 4; forearm, 2; shoulder, 2; buttocks, 1; abdomen, 1; back, 1; neck, 1; face, 1; and armpit region, 2.

The duration of illness and the result of the treatment are given in Table 1.

Table 1.

Duration of Illness [prior to treatment] (mo)	No of Cases	Good, Completely Cured	Fair, Considerable Decrease in Size of Wound	No Effect
1-2	9	9	--	--
~~2-4~~	~~10~~	7	2	1
~~4-6~~	4	3	--	1
6-8	5	3	1	1
8-12	4	2	1	1
12-24	3	2	--	1
Total	35	26	4	5

As the table shows, full recovery occurred in 26 cases, or 74%. In five cases, or 14%, the treatment had no effect.

Absence of healing effects was noted mostly in middle-aged patients (over 40 years, civilians).

In most patients we noted a considerable shift in the clinical course of the disease in the first days after performance of the implantation. It is characteristic that nearly all patients noticed disappearance or lessening of the pain in their wound after 2-3 or 2-4 days. The base of the wound was covered with juicy, bright red granulations. The edges were noticeably denser at the expense of resorption of the infiltrated periphery. Epithelization took place at the same time. The scars after healing were tender and smooth. In three cases we noticed excess growth of granulations.

It is essential to point out that on four patients with bilateral afflictions (ulcers of both legs, nonhealing wounds, and infiltration of the armpit regions) better results were obtained on the side on which the first implantation had been performed. In these cases, tissue was implanted on the other side in 12 days. The result was good. In the case of patients with attendant furunculosis (five cases), we noticed very quick ripening or resorption (on the second day) of the individual furuncles.

A case of nonhealing ulcers of the legs with accompanying ozena was interesting. The implantation was performed because of the leg ulcers. However, parallel with the improvement in the pathological state of the legs we noted that on the third day after the transplantation, the fetid odor from the nose decreased. On the eleventh day the odor had completely stopped. The patient's sense of smell was restored. We give the case history below.

Patient G., born 1927, entered hospital 1 July 1947. Diagnosis: trophic ulcers of the right leg, ozena. Ulcers were formed on the site of furuncles which he had 3 months before. Unsuccessful ambulatory treatment, followed by a month's treatment in the hospital of the unit. Patient had been suffering from ozena since 1942. Had been under treatment by civilian medical institutions until drafted in 1944, and from then on under hospital treatment, without improvement in his condition. Patient was depressed. The state of the laryngo-oto-rhinal organs was as follows: mucous membrane of the nose atrophic, covered by large quantities of dry crust. Strong, fetid odor from the nose. Two ulcers on the front surface of the middle third of the leg, dimensions 3 x 3 cm and 4 x 2 cm, with irregular ground and dry, pale-gray granulations. The periphery of the wound was infiltrated and cyanotic.

On 10 July, a Krauze implantation was performed. On 12 July, granulation of the ulcers was revived and infiltration on the periphery decreased. The fetid odor from the nose decreased considerably. On 15 July, the ulcers were covered by fresh, juicy granulations starting from the edges of the epithlization. Odor from the nose was slight. Less crust formed, and the mucous membrane of the nose became moist.

On 18 July, the epithelization of the ulcers was good. The dimensions of the ulcers were down to 1 x 0.5 cm. The odor from the nose was hardly noticeable. No crust was forming. Patient could distinguish the smell of alcohol, iodine, and ammonia.

On 21 July, the ulcers were completely epithelized. The odor from the nose ceased. No crust was forming. The mucous membranes of the nose were moist. Patient's sense of smell was restored.

On 22 July, he was discharged as recovered. Checkup was continued for one month.

The time elapsed between the implantation and recovery with complete healing was as follows: for 10 patients, 7-10 days; for 8 patients, 10-20 days; for 6 patients, 20-30 days; and for 2 patient, 30-40 days.

We cite below two case histories for the group of patients with nonhealing wounds.

Lt Ch., born 1920, entered hospital with nonhealing postamputation wounds of nine fingers. The fingers had been amputated because of third-degree frostbite. Length of illness, 6 months. We cut out and scraped off the pathological granulations three times. The wounds failed to heal. A Krauze implantation was performed twice, and complete healing took place within 16 days.

Pvt K., born 1924, trophic ulcers of the right leg. Duration of illness, 2 years. Unsuccessfully treated many times by other hospitals prior to admittance to our hospital. A single implantation of conserved tissue was performed. The ulcers healed within 15 days.

The results of the treatment of the remaining minor groups (stomach and duodenal ulcers, causalgia, neuritis, etc.) are shown in Table 2.

Table 2.

Illness	No of Cases	Recovered	Improved	No Effect
Scars and inflammatory infiltrations	10	6	2	2
Stomach and duodenal ulcers	3	2	1	-
Neuritis	5	3	2	-
Causaliga	4	3	1	-
Phanthom pains after amputation of extremities	3	3	-	-
Total	25	17	6	2

In seven cases of causalgia and phanthom pains, the syndrome was eliminated in six patients after the first implantation, while in one case, the pain was greatly reduced after two grafts.

How can the therapeutic effect of the implantations be explained?

Krauze explains it by the dissolution of transplanted conserved tissues with the subsequent absorption of the proteolysis products. It seems to us that the histamine and histamine-like substances in which embryonic tissues are particularly rich and which are formed in the breaking down of the tissue (in particular, implanted fetus membrane) create exceedingly favorable conditions for cell growth. It is known that histamine brings about the dilation of capillaries and thus increases the blood supply to the pathological section. A good nutritive medium for the cells being regenerated is formed, which stimulates the potency of growth. The proteolysis products probably also have an influence on the nervous system, both as an analgesic and by reason of their influence on the nervous trophism of the diseased tissues.

Summary

1. Implantation of conserved fetus membrane is absolutely harmless and is a powerful stimulating factor in the regeneration of slowly healing and nonhealing wounds and ulcers.

2. The ease and simplicity of the method allow its wide use even in ambulatory treatment.

3. Implantation has a very pronounced analgesic effect in cases of causalgia, phanthom pains, neuritis, and other pain syndromes.

4. Implantation promotes the resorption of inflammatory infiltrates, also the smoothing out and softening of callous and keloid scars.

5. Krauze tissue therapy considerably shortens the time of treatment of wounds and ulcers which do not heal for a long time.

6. The therapeutic effect of implantations on such irksome diseases as ozena, as observed by us, should be investigated on a wider scope.

7. Cases in which tissue treatment remains without result should be submitted to exhaustive study.

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